Do individuals value distributional fairness? The effects of inequality in majority decisions*

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Paper prepared for presentation at the  
1st Gothenburg-Barcelona workshop on experimental political science  
(University of Gothenburg, May 7-8, 2015)

This version: April 2015

Abstract

The so-called chaos-theorems have greatly influenced the discussion of the viability of democracy. Under most preference configurations, majority voting in n-dimensional policy spaces is theoretically unrestricted and can reach any point in the policy space. Empirical research, however, shows an apparent stability of democratic decisions. Recent theoretical developments have emphasized social preferences as a possible explanation for overcoming majority rule’s instability problem. Hence, it is assumed that individuals do not only maximize their own well-being, but also value distributional fairness when making decisions. However, there is hardly any experimental research on the influence of social preferences in majority decisions in n-dimensional policy spaces. This paper presents findings from laboratory experiments on majority decisions in two-dimensional policy spaces with a systematic variation of the fairness properties of the incentive structures. The results show that distributional fairness is an important motivational factor in democratic decisions in continuous policy spaces.

* This work has received generous funding from the Fritz Thyssen Foundation (Az. 20.12.0.075). Financial support from the German Research Foundation (DFG) for the Cologne Laboratory for Economic Research is also gratefully acknowledged. Furthermore, I would like to thank Holger Reinermann for his excellent research assistance.
Introduction

Majority rule is arguably the most important democratic decision making mechanism (e.g. Dahl 1989; McGann 2006). Therefore, gaining deeper knowledge about the factors influencing voting decisions is central for improving our understanding about the viability and meaning of democratic decision making. Traditional rational choice models usually assume egoistically motivated actors who are only interested in the maximization of their own material welfare. However, it is by now a well-known fact that individuals display other-regarding behavior in a large variety of different situations. Thus, individuals do not only maximize their own well-being, but also take the well-being of other actors into account. The influence of these social preferences is most apparent in laboratory experiments such as ultimatum games, dictator games and public goods games where many participants display a willingness to bear costs in order to influence other participants’ payoffs (e.g. Camerer 2003; Charness and Rabin 2002). However, there are still large gaps in our knowledge about the influence of social preferences in democratic decisions. This paper aims to contribute towards filling this gap.

The experimental evidence on social preferences has greatly influenced the development of several behavioral models of individual motivations (for overviews see Fehr and Fischbacher 2002; Sobel 2005). The main divide between these models concerns the question whether individual actions are contingent on intentions of others or not. For example, Rabin (1993), Levine (1998), Dufwenberg and Kirchsteiger (2004), and Falk and Fischbacher (2006) have developed reciprocity models based on the assumption that people like to help those who are helping them and to hurt those who are hurting them. Charness and Rabin (2002) have proposed a more complex model which assumes that individuals are primarily motivated by efficiency concerns. In their model, individuals incur costs to increase the payoffs of all participants, especially the payoffs of the worst-off. The model also contains an element of reciprocity because individuals withdraw their willingness to sacrifice parts of their own payoff when others are themselves unwilling to sacrifice.
Another family of social preference models claims that inequality aversion is the driving force of individual motivations. In the models developed by Fehr and Schmidt (1999) as well as Bolton and Ockenfels (2000) individuals are motivated by a desire to achieve an equitable distribution of payouts. Hence, actors take the distributional consequences of decisions into account, while other actors’ intentions do not play a role in inequality aversion models. In many situations, however, reciprocity models and inequality aversion models predict identical individual behavior, because both types of models rely on the concept of fair or equally distributed payoffs (Fehr and Fischbacher 2002, C3). For instance, in reciprocity models other actors’ intentions are usually determined by the equitability of the realized outcome relative to all feasible alternatives. Hence, distributional fairness plays a major role in all social preference models. Moreover, all models assume that self-interest – i.e. the concern for an actor’s own welfare - is part of individual motivations. Consequently, if the incentive structure of the decision introduces a tradeoff between the maximization of an actor’s own material welfare and her other-regarding preferences, the influence of social preferences on the outcome of the decision depends on the strength of an actor’s social preferences relative to her self-interest and the costs of an other-regarding choice in terms of foregone payoffs.

The question whether the logic of the social preference models also extends to democratic decision making is still largely open. Committee decision making experiments provide an excellent setting for investigating individual motivations and thus the influence of social preferences in democratic decisions. The existing experimental literature breaks down into experiments where subjects have to choose a single alternative from a discrete set of alternatives and experiments where subjects have to choose a point from a usually two-dimensional policy space. Especially experiments with a discrete set of alternatives have produced some evidence that subjects take distributional consequences of their decisions into account (e.g. Eavey and Miller 1984, 1984; Miller and Oppenheimer 1982). For instance, Sauermann and Kaiser (2010) systematically vary the incentive structure of the payout tables.
by manipulation the fairness properties of the rational choice equilibrium. They find that individual behavior is motivated by self-interest and distributional fairness. Thus, committees choose the equilibrium if it provides an equal distribution of payoffs. However, if the equilibrium provides an unequal distribution of payouts when at the same time another alternative provides high and more equally distributed payoffs for the participants, the outcomes of majority rule systematically deviate from the predicted equilibrium.

From the perspective of democratic theory, majority decisions in n-dimensional policy spaces are more relevant than decisions with a discrete set of alternatives. As Arrow (1963) has shown, all fair voting mechanisms exhibit an indeterminacy problem and thus do not necessarily lead to an unambiguous decision. In addition, the so-called chaos theorems demonstrate that majority rule in policy spaces suffers from generic instability (McKelvey 1976; Schofield 1978). Hence, in case of an empty core\(^1\) any alternative in the policy space can be reached, given the appropriate agenda. The theoretical implications of the social choice theorems have sparked a large discussion on the viability of democracy. For instance, Riker (1982, 1986) argues that the possible absence of a voting equilibrium permits ‘herestetical’ manipulations of the voting mechanism via strategic voting, agenda control, and the introduction of new dimensions into the policy space. Hence, from Riker’s point of view, democratic decisions are arbitrary and lack meaning.

Riker’s pessimistic view on democracy has been criticized in various ways. For instance, Mackie (2003) demonstrates that the entire empirical evidence of the instability and arbitrariness of democratic decisions is incorrectly constructed, resting on false assumptions about actors’ preferences. Recent theoretical developments have emphasized social preferences as a possible explanation for the apparent stability of democratic decisions. Thus, Frohlich and Oppenheimer (2007) show that the instability problem can be overcome when individual

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\(^1\) The core comprises of the set of un-dominated alternatives. An alternative is un-dominated if no alternative is preferred to it by a majority of voters.
preferences include a sufficiently strongly held conception of distributive justice. In Wittman’s (2003) model, individuals are motivated by a combination of self-interest, efficiency concerns and inequality aversion. He comes to the conclusion that social preferences of a certain strength create conditions for stable majority decisions when groups decide over the redistribution of incomes. Tyran and Sausgruber (2006) also study voting decisions over redistribution. Applying the inequality aversion model by Fehr and Schmidt (1999), they demonstrate that even weak inequality aversion can promote the adoption of redistributive policies.

Although social preferences offer a possible theoretical explanation for the empirically observed absence of the instability problem, there is hardly any experimental research on the influence of social preferences in majority decisions in n-dimensional policy spaces. The existing evidence reviewed in the following section of this paper shows that results cluster closely around the predicted equilibrium if the core is not empty. However, committees only rarely pick the exact equilibrium point. What is missing in the literature is a systematic variation of the fairness properties of the incentive structures in majority decision making in policy spaces. In this paper, I present findings from laboratory experiments on majority decisions in a two-dimensional policy space showing systemic deviations from the equilibrium if the theoretically predicted outcome is characterized by an unfair distribution of payouts. In cases of high inequality, I find that selected points diverge from the core in the directions of points guaranteeing a more equal distribution of payoffs. Hence, self-interest and distributional fairness are also important motivational factors in democratic decisions in continuous policy spaces.

**Experimental evidence on committee decision making in two-dimensional policy spaces**

In the following, I will concentrate on spatial committee decisions in which the induced preferences constitute a non-empty core. Only in this case, traditional rational choice theory makes an unambiguous point prediction which can be contrasted with real subject behavior.
The core thus provides a platform from which to study the underlying motivations of participants in experiments (Schotter 2006).

The experimental design by Fiorina and Plott (1978) (in the following FP) has become the role model of all subsequent experiments on committee decision making. For that reason, I will discuss FP’s experimental design in greater detail. Each committee of the experiment consists of five participants recruited among university students, and the task is to select a point from a two-dimensional policy space. FP employ a neutral framing. The policy space is presented in an abstract way without assigning any special meaning to the two dimensions. FP induce Euclidean preferences through money (cf. Smith 1976). Hence, every subject has an ideal-point in the policy space and a subject’s payoff decreases the greater the distance between her ideal-point and the outcome chosen by the committee.

FP provide subjects with incomplete information. While the locations of all ideal-points are common knowledge, subjects only know their own payoff functions. Consequently, subjects know their own payoffs for every point of the policy space, but not the payoffs of other committee members. Committee members communicate face-to-face, yet discussions of monetary values, threats, and the arrangement of side-payments are prohibited. A neutral experimenter monitors and enforces the rules of the experiment.

FP’s experiment is designed as a one-shot game. Hence, committees have to make a single binding decision. A point at the margin of the policy space serves as the starting point of the committee decision. Upon recognition by the experimenter, any committee member can propose an amendment to the current motion. Committees discuss and vote on the proposal. If it receives a majority of at least three votes, the proposal becomes the new motion. The amendment process is repeated until one committee member makes a proposal to conclude the debate. If this proposal is accepted by a majority of committee members, the current motion is the final binding result of the committee decision. If it does not pass, the floor is open to new amendments. Decision making ends with a successful proposal to conclude the debate.
FP study treatments with an equilibrium and treatments with an empty core. Besides, they also vary payoff levels in both types of treatments. Their results show that the core is a good predictor in case of high payoffs. Although committees only rarely choose the predicted point exactly, the results cluster closely around the core. The predictive power of the core decreases if payoffs are lower. However, the core is still the best prediction among all competing approaches tested by FP.

Other studies confirm the predictive power of the core (e.g. Berl et al. 1976; Isaac and Plott 1978; McKelvey and Ordeshook 1984). In a review article, McKelvey and Ordeshook (1990, 111) thus conclude that “if preferences and alternatives are spatial, if a Condorcet winner exists, and if procedures imply a game-form (or "approximate game-form") that links this winner to the core, then that winner is the final outcome, either identically or approximately.”

A more recent experiment by Wilson (2008) provides further evidence for the attractiveness of the core. Contrary to all earlier studies on committee decision making in two-dimensional policy spaces, committees in Wilson’s experiment do not interact directly face-to-face. Instead, the experiment is conducted via a computer network.2 This allows Wilson to analyze the complete decision making process with all successful and unsuccessful amendments in detail. His results show that committee decisions converge on the core. Every successful amendment moves the current motion on the floor closer to the core in the course of a group decision. Thus, most final outcomes cluster closely around the predicted equilibrium, yet no committee selects exactly the equilibrium point.

While committee experiments with a discrete set of alternatives have produced some evidence that distributional concerns affect voting behavior, the influence of inequality on

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2 The locations of subjects' ideal-points are common knowledge in Wilson’s experiments. However, subjects do not learn the payoffs of the other committee members. Hence, like all other experiments discussed so far, Wilson’s design also establishes incomplete information among subjects.
decisions in continuous policy spaces has hardly received any attention in the literature. An important exception, however, is Eavey (1991) who uses the same ideal-points as the core experiments by FP but changes the shape of the payoff functions. Compared to FP’s design, Eavey holds the ordinal incentive structure constant, but creates a region of cardinally fair alternatives distinct from the core. Her results show that committee decisions are pulled in the direction of the fair alternatives. However, the core’s attraction is still apparent in the data (Grelak and Koford 1997). Hence Eavey’s (1991) study provides some evidence that self-interest and fairness also influence committee decision making in spatial settings.

I argue that further research is needed on the sensitivity of committee decisions to distributional preferences (cf. Miller 2011, 364). Apart from Eavey (1991), no study systematically varies the distributional properties of the incentive structure. Also, the fact that experimental results usually cluster closely around the core, but seldom choose the predicted equilibrium exactly in one-shot interactions, brings up the question whether committees reach the core if making multiple decisions. Wilson’s (2008) finding that the decision making process converges to the core leaves open the question whether the convergence process has been concluded by the end of the experiment. This cannot be answered in a one-shot setting which is used in all existing studies on committee decision making.

Most importantly, an additional problem of all previous experiments is the lack of control of communication. As a result, the actual level of subjects’ information about the experiments’ incentive structure is unclear. Although experimental procedures usually prohibit communication about exact monetary values, committee members might still be able to exchange additional information through their gestures, their facial expressions, or their accentuation. However, it is unclear how this additional information is interpreted by other committee members, and thus, the actual level of information in the experiments is unknown. As a consequence, employing incomplete information might hinder subjects to take distributional aspects of the decision into account correctly, even if subjects are motivated by
social preferences. Hence the existing experimental designs do not allow clear conclusions about the influence of social preferences in spatial committee decisions.

In the following, I develop a modified experimental design which corrects for these shortcomings by studying repeated committee decisions in a setting that implements complete information among committee members and systematically varies the fairness properties of the incentive structure.

**Experimental design**

Committees in my experiment consist of five members, neutrally labeled Participant A, B, C, D, and E, and have to choose points in a two dimensional policy space. The policy space is 200 units (x-axis) by 150 units (y-axis) and thus consist of 30,000 alternatives. Committee members have unique ideal-points in the policy space. Participants earn tokens during the experiment. The number of tokens earned in a period increase the smaller the distance between a participant’s ideal-point and the selected point in the respective period. At the end of the experiment, all tokens earned during the experiment are converted into money with 1000 tokens yielding €1.00. The experiment is programmed in z-Tree (Fischbacher 2007), and subjects interact via a computer network. Hence, there is no communication between subjects besides voting.

Figure 1 shows the course of the decision process. In the first period of the experiment, a point at the right top margin of the policy space (190|140) is the status quo. At the beginning of a period, the computer randomly picks a single committee member as the agenda setter of the current period. Before making her decision, the agenda setter can analyze points in the decision space by clicking on the alternatives. The experimental design employs complete cardinal information. When the agenda setter clicks on a point in the policy space, she gets to

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3 The other four committee members see a waiting screen while the agenda setter makes her decision.
know her own payoff for the respective point and the numbers of tokens of all other committee members. She also knows the complete distribution of payoffs for the current status quo point.\footnote{The instructions of the experiment in the appendix contain screenshots from all stages of the decision process.}

**Figure 1  Schematic representation of the decision process**

![Diagram of the decision process]

The agenda setter has two options. She can either propose a new point which is then put to a vote to the whole committee, or the agenda setter can maintain the current status quo. If the agenda setter maintains the status quo, the status quo point is the result of the current period, and the period ends. If the agenda setter makes a proposal, the other committee members decide by voting between the proposed point and the status quo. The decision rule is simple majority rule.\footnote{If the agenda setter makes a proposal, her vote is automatically counted in favor of her own proposal in the subsequent voting stage.} Again, committee members decide under complete information. They get to know their
own payoffs for the proposed point and the status quo as well as the payoffs of all other
committee members resulting from the proposal and the status quo. Committee members vote
simultaneously. Hence, they do not get to know the other members’ voting decisions while still
deciding between the proposal and the status quo. The alternative supported by a majority of
the committee members is the result of the current period and serves as the status quo of the
subsequent period. At the end of a period, subjects receive information about the distribution
of votes in the current period (if a vote was necessary), the distribution of payouts in the current
period and the cumulative distribution of payouts from all previous periods. Afterwards, a new
period starts and the computer again assigns the role of the agenda setter randomly to a
committee member. Committees make 20 consecutive decisions under the same set of rules.
Hence, the development of results can be tracked over time. The experimental design uses a
partner matching design. Consequently, the composition of the committees remains constant
throughout the whole experiment.

The experiment provides subjects with complete cardinal information in all stages of
the decision process. It thus abstracts from one of the main problems of real decision makers
who have to assess how others evaluate particular alternatives. Moreover, the experimental
design enables subjects to take distributional consequences of their decisions into account
without having to decide under incomplete information about other subjects’ payouts.

Incentive structure

The induced preferences in all treatments of the experiment satisfy Plott’s (1967) radial
symmetry conditions. Hence, the predicted equilibrium – the core – is exactly in Participant A’s
ideal-point (49/68) in all treatments. The core thus provides a common baseline for comparing
behavior within and between treatments (Schotter 2006).
Table 1  Incentive structures in experimental treatments

| Treatment                     | Coordinates of participants’ ideal points (x|y) | Payout functions | Payouts in the core (in tokens) | Standard deviation of tokens in the core |
|-------------------------------|-----------------------------------------------|------------------|-------------------------------|----------------------------------------|
|                               | A (Core)  B   C  D  E                         |                  |                               |                                        |
| Low inequality treatment (LIT)| 49|68  39|52  25|74  69|100  109|53 | f1  f1  f1  f1  f1 | 1000  883  845  760  604 | 147.7 |
| High inequality treatment (HIT)| 49|68  39|52  25|74  69|100  109|53 | f1  f1  f1  f2  f2 | 1000  883  845  337  102 | 391.1 |
| Misery treatment (MT)         | 49|68  39|52  25|74  69|100  109|53 | f2  f2  f2  f2  f2 | 1000  645  542  337  102 | 337.1 |

Payout functions:

Flat payout function ($f_1$): tokens = $0.75 \times \left(1000 \times e^{-\left(\frac{\text{distance}}{125}\right)}\right) + 0.25 \times \left(1000 \times e^{-\left(\frac{\text{distance}^2}{7200}\right)}\right)$

Steep payout function ($f_2$): tokens = $0.5 \times \left(1000 \times e^{-\left(\frac{\text{distance}}{25}\right)}\right) + 0.5 \times \left(1000 \times e^{-\left(\frac{\text{distance}^2}{1800}\right)}\right)$

distance = $\sqrt{(x - \text{opt}_x)^2 + (y - \text{opt}_y)^2}$

$\text{opt}_x = x$-coordinate of Participant i’s ideal-point

$\text{opt}_y = y$-coordinate of Participant i’s ideal-point
Table 1 gives an overview over the induced incentive structures in the treatments of the experiments. Overall, the experiment consists of three different treatments. Treatments systematically manipulate the level of inequality of the induced incentive structure by varying the slopes of payout functions. At the same time, locations of ideal-points are kept constant between treatments (confer Table 1). Hence, the experiment varies cardinal payoffs but controls for the ordinal incentive structure by holding it constant. In order to manipulate inequality two different types of payout functions are used (see Figure 2), a flat payout function \( f_1 \) and a steep payout function \( f_2 \). Both functions assign 1,000 tokens to a voter, if the committee selects her ideal-point, and both functions converge towards zero tokens, yet never become negative. Hence, subjects cannot incur losses during the experiment. The slopes of \( f_1 \) and \( f_2 \) differ. Under the steep payout function \( f_2 \) payouts decrease much more rapidly than under the flat payout function \( f_1 \) if result move away from a committee member’s ideal-point.

**Figure 2   Shape of payout functions**

The left column of Figure 3 shows the locations of ideal-points in the treatments (for the exact coordinates confer Table 1) and the resulting individual payouts in tokens. The right
column shows the level of inequality of the induced incentives measured by the standard deviation of the distribution of tokens.

In the *Low inequality treatment* (LIT), all five committee members have flat payout functions. The distribution of tokens in the core is characterized by low inequality. Hence, all committee members earn substantial amounts of tokens if committees select the core. As Table 1 shows, even the worst-off committee member, Participant E, still gains 604 tokens in the core, while Participant A gains 1,000 tokens.

In the second treatment, the *High inequality treatment* (HIT), Participants A, B, and C have flat payout functions, and Participants D and E have steep payout functions. The payoffs of D and E shrink rapidly for committee decisions diverging from their ideal-points. Consequently, in comparison to LIT the distribution of tokens in the core is characterized by high inequality in HIT. D and E earn considerably lower amounts if the committee selects the core.

In the *Misery treatment* (MT), all five committee members have steep payout functions. As Figure 3 shows, every committee member can only gain high amounts if the committee chooses a point close to her ideal-point, and thus, no region of the policy space guarantees high payoffs for all committee members. As a consequence, inequality is also high in the core of MT. Only Participant A earns high payouts if committees choose the predicted rational choice equilibrium, while all other committee members earn considerably less. Hence, the core in MT is characterized by misery.
Hypothesis

The experiment systematically varies the fairness properties of the incentive structure. In the social preference models reviewed above, the concept of distributional fairness plays an important role in individual motivations along with self-interest. If behavior in spatial committee decision making is driven by the same motivational pattern, it is possible to deduce
predictions about the probability of committees selecting the core in the treatments of the experiment. Furthermore, we can make predictions about the direction of possible deviations from the core.

In LIT, the core is characterized by relatively high payouts for all committee members and a low degree of inequality. Hence, the core is both attractive because of its absolute payouts and its fairness properties. By choosing the core, committee members can thus satisfy their social preferences without having to sacrifice personal payouts. As there is only a very weak tradeoff between self-interest and distributional fairness, I expect that experimental results in LIT will be located close to the core without exhibiting systematic deviations in a certain direction.

As Figure 3 shows, the equilibrium in HIT is characterized by high inequality. Although Participants A, B, and C, still gain high payouts if committees choose the core, the equilibrium is less attractive, if committee members also value the fairness properties of alternatives. Moreover, to the right of the core, there exist alternatives guaranteeing modestly high and more equally distributed payoffs for the whole committee. Hence, if committee members are motivated by self-interest and distributional fairness, I expect that results systematically differ from the core, by committees choosing points to the right of the predicted rational choice equilibrium.

The core in MT is characterized by a considerably higher level of inequality than the core in LIT. Hence, the core in the misery treatment does not exhibit fairness properties. However, contrary to the high inequality treatment HIT, there exist no other alternatives simultaneously guaranteeing high and equally distributed payoffs for all committee members in MT. There is a region of high equality approximately half-way between the ideal-points of Participant A and E. However, in this region, absolute payouts for almost all committee members are pretty low (cf. Figure 3). Hence, this region constitutes no attractive alternative to the core. Therefore, in absence of alternatives to the core that provide high and fairly distributed
payouts for committees, I expect that experimental results do not systematically differ from the core in the misery treatment.

Experimental results

The experiment was conducted in July and September 2013 in the Cologne Laboratory for Economic Research at the University of Cologne. The laboratory’s subject pool comprises more than 3,000 registered subjects, most of them students from the University of Cologne. Using ORSEE, the Online Recruitment System for Economic Experiments (Greiner 2004), I recruited participants randomly from the whole subject pool by sending them email invitations. In this paper, I study the behavior of 175 participants. 60 participants form twelve committees in HIT and MT each. In LIT 55 participants form eleven committees because some participants failed to show-up at the laboratory on time.

In order to avoid uncontrolled interactions between participants, subject were randomly assigned to cubicles upon arriving at the laboratory. At the beginning of the experiment, subjects received written instructions explaining the task in neutral and context free language. After having read the instructions, subjects had to fill in a short questionnaire testing the understanding of the rules of the experiment.

All tokens earned during the experiment were converted into money directly after the experiment. The conversion rate was 1/1,000. Hence, 1,000 tokens earned in the experiment yielded €1.00 for a participant. Including a show-up fee of €2.50 subjects received on average €15.63. The experiment took about 90 minutes. Subjects’ payoffs were thus equivalent to the average local hourly wage of jobs typically offered to students.

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6 Instruction can be found in the appendix.
Success of the core

As a first step of the data analysis, I look at the success of the core in the three treatments. As column 3 of Table 2 shows, in all treatments only a small number of committee decisions result in the selection of the exact core alternative. The overall selection rate of the core in the experiment is only 8.57%. In line with the explanation that behavior in majority decisions is influenced by concerns for distributional fairness, the success of the core is highest in LIT (20.0%) and lowest in HIT (5.4%).

### Table 2  Selection of the core

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number of decisions</th>
<th>Core (49/68)</th>
<th>Distance to core ≤ 5 points</th>
<th>Distance to core ≤ 10 points</th>
<th>Divergence: Change distance to Core &gt;0 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIT</td>
<td>220</td>
<td>44 (20.0%)</td>
<td>85 (38.6%)</td>
<td>126 (57.3%)</td>
<td>21 (9.5%)</td>
</tr>
<tr>
<td>HIT</td>
<td>240</td>
<td>13 (5.4%)</td>
<td>42 (17.5%)</td>
<td>101 (42.1%)</td>
<td>32 (13.3%)</td>
</tr>
<tr>
<td>MT</td>
<td>240</td>
<td>15 (6.3%)</td>
<td>48 (20.0%)</td>
<td>118 (49.2%)</td>
<td>30 (12.5%)</td>
</tr>
<tr>
<td>ALL</td>
<td>700</td>
<td>60 (8.57%)</td>
<td>175 (25.0%)</td>
<td>345 (49.3%)</td>
<td>83 (11.86%)</td>
</tr>
</tbody>
</table>

Looking at outcomes which are close to the predicted equilibrium confirms the pattern. Overall only 25.0% of all committee decisions are located in a radius of five points around the core. Again, the number is highest under low inequality. Only if the radius is increased to ten points, about half of the committee decisions (49.3%) are “close” to the core. Again, the number is highest in the low inequality treatment (57.3%) and lowest in the high inequality treatment (42.1%). Overall, in no treatment of the experiment the success of the core is impressive at first glance.

The analysis of the development of the distances of final results from the core per period corroborate the finding of the low attraction of the core. Traditional rational choice theory predicts that results never diverge from the core between two periods of the experiment. This prediction fails in all treatments. As column 6 of Table 2 shows, in all treatments I find many
instances of divergence from the core where the distance to the core increases between two periods. This can only happen if at least one committee member acts against her own material self-interest.

### Table 3 Retention of the core

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Number of committees</th>
<th>Number of committees choosing the core at least once during the experiment</th>
<th>Number of committees selecting the core in all periods after first selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIT</td>
<td>11</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>HIT</td>
<td>12</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>MT</td>
<td>12</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>ALL</td>
<td>35</td>
<td>13</td>
<td>2</td>
</tr>
</tbody>
</table>

Moreover, traditional rational choice models predict that once a committee hits the core, results will stay in the core in the consecutive periods until the end of the experiment. However, as Table 3 shows, committees leave the core in all treatments of the experiment. Overall, only 13 out of 35 committees select the core at least in one period of the experiment, and only 2 out of these 13 committees select the core in all consecutive periods after the first selection of the core while 11 committees diverge from the core again.

**Analysis of spatial distribution of outcomes**

In a next step, I analyze whether committee decisions deviate from the core systematically in a certain direction. Column 2 of Table 4 shows the x-coordinates and the y-coordinates of the mean outcomes over all 20 periods of the experiment per treatment. Column 3 shows results from 2-sided Wilcoxon tests which analyze whether chosen points differ systematically from the core along the x-axis and the y-axis. I find significant differences from the core along the x-axis in all treatments. In addition, I find slight systematic deviations from
the core along the y-axis under low inequality and misery. Thus in all treatments, committees choose points significantly to the right of the core along the x-axis. This is probably due to the effect that the induced incentive structure disadvantages player D and E in all treatments to some extent.

Column 2 and 3 of Table 5 analyze between treatment differences taking all 20 periods into account. Consistent with my hypothesis postulated above, results in HIT deviate more from the core along the x-axis than results in the other two treatments. However the difference is not significant.

Partitioning the experiment into two ten-period segments reveals developments over time. Figure 4 shows mean outcomes per treatment in period 1-10 and period 11-20 graphically. In LIT, average results converge towards the core. The ten-period average outcome in the second half of the experiment is closer to the predicted equilibrium than the ten-period average outcome in the first half. In HIT, however, average outcomes substantively diverge from the core between the first and the second half of the experiment. In the first ten periods, the average decision in HIT is (53.1|69.0). In the second half, committees on average choose alternatives about ten points to the right along the x-axis (62.8|69.5). As the last column of Table 4 reveals, average outcomes in the two halves of HIT differ significantly along the x-axis. The finding of divergence from the core clearly contradict traditional rational choice models but is consistent with the theoretical assumption presented above that individual committee members are motivated by self-interest and fairness. During the first half of the experiment, by choosing points relatively close to the core, committee members earn highly unequal payoffs. In later periods, committees choose points in the area with more equally distributed payoffs in order to reduce the inequality of payoffs. As a consequence, average decisions under high inequality diverge from the core along the x-axis. In MT, results slightly converge towards the core along the y-axis between the two halves of the experiment.
Table 4  Differences from the core and within treatment comparisons

| Treatment | Mean outcome period 1-20 (x|y) | Difference from core<sup>a</sup> | Mean outcome period 1-10 (x|y) | Difference from core<sup>b</sup> | Mean outcome period 11-20 (x|y) | Difference from core<sup>c</sup> | Difference between mean outcome period 1-10 and period 11-20<sup>d</sup> |
|-----------|-------------------------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|--------------------------------|---------------------------------|
| LIT       | 53.7 | 69.0                          | x: p=0.021                     | 55.5 | 69.0                          | x: p=0.016                     | 51.9 | 69.1                          | x: p=0.756                     |
|           |      |                               | y: p=0.075                     | 69.0                          |                              | y: p=0.534                     | 51.9 | 69.1                          | y: p=0.398                     |
| HIT       | 57.9 | 69.2                          | x: p=0.010                     | 53.1 | 69.0                          | x: p=0.100                     | 62.8 | 69.5                          | x: p=0.008                     |
|           |      |                               | y: p=0.126                     | 69.0                          |                              | y: p=0.530                     | 62.8 | 69.5                          | y: p=0.240                     |
| MT        | 53.3 | 70.0                          | x: p=0.041                     | 51.7 | 71.4                          | x: p=0.272                     | 54.9 | 68.6                          | x: p=0.071                     |
|           |      |                               | y: p=0.077                     | 71.4                          |                              | y: p=0.019                     | 54.9 | 68.6                          | y: p=0.724                     |

Note: All tests are 2-sided Wilcoxon Tests.

<sup>a</sup> H<sub>0</sub>: x-coordinate of mean outcome period 1-20 = 49 (x-coordinate of core)
<sup>b</sup> H<sub>0</sub>: y-coordinate of mean outcome period 1-20 = 68 (y-coordinate of core)
<sup>c</sup> H<sub>0</sub>: x-coordinate of mean outcome period 11-20 = 49 (x-coordinate of core)
<sup>d</sup> H<sub>0</sub>: y-coordinate of mean outcome period 11-20 = 68 (y-coordinate of core)
| Comparison | Mean outcomes period 1-20 (x|y) | Difference between treatments\(^a\) | Mean outcomes period 1-10 (x|y) | Difference between treatments\(^b\) | Mean outcomes period 11-20 (x|y) | Difference between treatments\(^c\) |
|------------|--------------------------------|----------------------------------|--------------------------------|----------------------------------|--------------------------------|----------------------------------|
| LIT vs. HIT | LIT: 53.7 | 69.0 | x: \(p=0.219\) | LIT: 55.5 | 69.0 | x: \(p=0.389\) | LIT: 51.9 | 69.1 | x: \(p=0.042\) |
|            | HIT: 57.9 | 69.2 | y: \(p=0.667\) | HIT: 53.1 | 69.0 | y: \(p=0.735\) | HIT: 62.8 | 69.5 | y: \(p=0.782\) |
| LIT vs. MT | LIT: 53.7 | 69.0 | x: \(p=0.735\) | LIT: 55.5 | 69.0 | x: \(p=0.242\) | LIT: 51.9 | 69.1 | x: \(p=0.356\) |
|            | MT: 53.3 | 70.0 | y: \(p=0.538\) | MT: 51.7 | 71.4 | y: \(p=0.074\) | MT: 54.9 | 68.6 | y: \(p=0.758\) |
| HIT vs. MT | HIT: 57.9 | 69.2 | x: \(p=0.133\) | HIT: 53.1 | 69.0 | x: \(p=0.817\) | HIT: 62.8 | 69.5 | x: \(p=0.106\) |
|            | MT: 53.3 | 70.0 | y: \(p=0.751\) | MT: 51.7 | 71.4 | y: \(p=0.083\) | MT: 54.9 | 68.6 | y: \(p=0.707\) |

Note: All tests are 2-sided Mann–Whitney U-tests.

\(^a\) \(H_0\): x-coordinate of mean outcome period 1-20 in Treatment A = x-coordinate of mean outcome period 1-20 in Treatment B

\(^b\) \(H_0\): y-coordinate of mean outcome period 1-20 in Treatment A = y-coordinate of mean outcome period 1-20 in Treatment B

\(^c\) \(H_0\): x-coordinate of mean outcome period 11-20 in Treatment A = x-coordinate of mean outcome period 11-20 in Treatment B

\(^c\) \(H_0\): y-coordinate of mean outcome period 11-20 in Treatment A = y-coordinate of mean outcome period 11-20 in Treatment B
Figure 4  Mean outcome in first and second half of the experiment
Comparing behavior between treatments in the two halves of the experiment also reveals patterns in line with the argument that concerns for distributional fairness systematically affect majority decision making. As column 4 and 5 of Table 5 show, in the first half of the experiment results in MT differ weakly from the alternatives chosen in the two other treatments along the y-axis. In the second half, 2-sided Mann-Whitney U test reveal that committees in HIT choose points significantly to the right along the x-axis compared to both LIT. The comparison to MT only barely misses the 10 percent significance-level.

Overall, the analyses of the spatial distribution of outcomes in the experiment produce strong evidence, that distributional preference affect majority decision making. Difference between treatments develop during the experiment as committees in the high inequality treatment diverge from the core. The finding of core divergence under high inequality is clear evidence that some participants in the experiment act against their own material self-interest in order to achieve a more equally distribution of payouts.

**Individual behavior**

So far, the empirical analyses of the experimental results have concentrated on the outcomes of committee decisions and thus on the aggregate level. Of course, the theoretical explanation offered in this paper that social preferences have an important effect in majority decisions relies on assumptions about individual behavior. Therefore, it is important to analyze decisions of individual committee members.

I begin with decisions of agenda setters. From a rational choice perspective assuming only actors motivated by material self-interest, an agenda setter should propose the alternative that maximizes her own material welfare from the set of alternatives that a majority of committee members prefers over the given status quo. Of course, the identification of exactly this alternative in a policy space with 30,000 different alternatives is quite a demanding task and failures to propose the payoff maximizing alternative cannot unmistakable be interpreted
as instances of non-egoistic behavior that is driven by social preferences. For example, in many cases bounded rationality might provide a plausible alternative explanation if the behavior of agenda setters deviates from the rational choice prediction. Therefore, I will rely on very strict definitions for non-egoistic agenda setter behavior in order to identify decisions that are very likely driven by social preferences.

The effect of social preferences is most obvious when an agenda setter proposes a point offering her less tokens than the current status quo. As the experiment provides committee members perfect information about the consequences of their decisions, bounded rationality can be excluded as a probable alternative explanation. Column 2 of Table 6 shows the number of decisions in which agenda setters willingly sacrifice own payoffs in comparison to the current status quo. Apparently, there is not much variation between treatments.

Before submitting a decision, agenda setters can examine the payoff consequences of points in the policy space by clicking on them. Conducting the experiment via a computer network allows me to track these examined points for all agenda setter decisions. Column 3 of Table 5 lists the number of agenda setter decisions where the agenda setter has clicked on points in the policy space before submitting her decision in a period which offer her more tokens than the finally submitted proposal and which offer more tokens than the current status quo to at least three committee members. Also in these cases, agenda setters willingly forgo own material payoffs. As Table 5 shows, agenda setters quite frequently propose points despite being aware of majority-preferred points offering higher individual payouts. As expected, the frequency is highest in HIT (28.8%), yet differences to the other treatments are relatively small.

The inference of underlying motivations of committee members in the voting stage is much simpler than the analysis of the behavior of agenda setters. Voters can either vote for the proposal or the current status quo. Payoff consequences for both options are common knowledge. Hence, a vote in favor of the alternative offering less tokens is most likely driven
Table 6  Non-egoistic individual behavior

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Agenda setter sacrifices tokens(^a)</th>
<th>Non-egoistic proposal by agenda setter(^b)</th>
<th>Non-egoistic vote by at least one committee member(^c)</th>
<th>Any non-egoistic individual behavior(^d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low inequality treatment (LIT)</td>
<td>18/220 (8.2%)</td>
<td>56/220 (25.5%)</td>
<td>51/164 (31.1%)</td>
<td>107/220 (48.6%)</td>
</tr>
<tr>
<td>High inequality treatment (HIT)</td>
<td>21/240 (8.6%)</td>
<td>69/240 (28.8%)</td>
<td>87/181 (48.1%)</td>
<td>142/240 (59.2%)</td>
</tr>
<tr>
<td>Misery treatment (MT)</td>
<td>18/240 (7.5%)</td>
<td>53/240 (22.1%)</td>
<td>73/195 (37.4%)</td>
<td>115/240 (47.9%)</td>
</tr>
</tbody>
</table>

Significance tests (2-sided Mann–Whitney U-tests)
H\(_0\): Any non-egoistic individual behavior in Treatment A = Any non-egoistic individual behavior in Treatment B
LIT vs. HIT: \(p=0.036\)
LIT vs. MT: \(p=0.733\)
HIT vs. MT: \(p=0.059\)

\(^a\) Agenda setter proposes point offering her less tokens than the current status quo.
\(^b\) Before submitting her decision in a period, the agenda setter has clicked on points in the policy space which offer her more tokens than the later submitted proposal and which offer more tokens than the current status quo to at least three committee members.
\(^c\) At least one committee member votes for alternative offering her less tokens than the other alternative.
\(^d\) Agenda setter sacrifices tokens OR Non-egoistic proposal OR Non-egoistic vote.
by social preferences. As predicted by the social preference models, non-egoistic voting behavior occurs most frequently under high inequality in HIT. In 87 out of 181 (48.1%) decisions in which committees members had to vote between two alternatives, at least one committee member voted for the alternative offering her less points than the competing alternative. In MT, the share is somewhat lower (37.4%), and it is lowest in LIT (31.1%).

Finally, the last column of Table 6 shows the number of committee decisions per treatment in which at least one committee member - i.e. the agenda setter or at least one voter – displayed behavior that is obviously motivated by social preferences. In line with the social preferences models, non-egoistic individual behavior occurs significantly more frequently in HIT (59.2%) than in LIT (48.6%) and MT (47.9%).

Conclusion

Experimental studies of committee decision making have a long tradition in political science. While experiments with discrete sets of alternatives show that individual behavior is motivated by self-interest and fairness (e.g. Sauermann and Kaiser 2010), it is still an open question how distributional preferences influence behavior in spatial settings. The existing experimental evidence of majority decision making in n-dimensional policy spaces shows that the core, if it is non-empty, is a good predictor of final outcomes (e.g. Fiorina and Plott 1978). Moreover, results tend to converge towards the core in the course of a committee decision (Wilson 2008).

In the presented study, I systematically vary the amount of inequality in a spatial committee decisions with a core. The experimental findings show an important influence of distributional preferences. Inequality causes systematic deviations from the core. Instead of convergence to the core, I find divergence away from the core in the course of the experiment if the policy space contains fairer alternatives besides the core.

7 Confer Table 6 for significance tests.
The finding that democratic decision making in policy spaces is influenced by social preferences has important implications for democratic theory. The implication of the so-called chaos-theorems that majority rule is virtually unrestricted in absence of an equilibrium has sparked research on preference-based constraints on majority rule instability.\(^8\) An important solution concept that has received a lot of attention in recent years is the “uncovered set” by Miller (1980).\(^9\) The uncovered set usually identifies moderate alternatives between the players’ ideal-points as possible outcomes of majority decision making, and a lot of experimental evidences supports the set’s predictions. For instance, Bianco et al. (2006) re-examined the results of experimental committee decisions in a policy space without a core. They show that 94% of the outcomes lie in the uncovered set. They also provide new supportive experimental evidence from five-player computer-mediated and 35-player paper-and-pencil committee decisions (Bianco et al. 2008).

Following the logic of the uncovered set, strategic considerations by the committee members prevent results from floating uncontrollably through the entire policy space and thus cause the central tendency of committee decision making. The results of the present study call this reasoning into question. First off all, the uncovered set equals the core if the core is non-empty (Cox 1987). Hence, the set’s prediction is inconsistent with the finding of systematic deviations from the core. Moreover, the uncovered set only relies on ordinal information about individual preferences and thus cannot explain the sensitivity of the results to a variation of cardinal payoffs in the experiment.

Instead of strategic considerations, the experimental findings of this study suggest that social preferences prevent majority rule instability. Fair alternatives are usually located in the

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\(^8\) The “competitive solution“ by McKelvey, Ordeshook, and Winer was one of the earliest proposals of a preference-based constraint on majority rule. Committee decision making is conceived as a coalition formation game and the bargaining process behind the voting decision induces stability into decision making. However, the competitive solution has been abandoned by the authors in light of negative experimental evidence.

\(^9\) An alternative \(x\) is covered by alternative \(y\) if \(y\) beats \(x\) in a pairwise vote and any alternative that beats \(y\) also beats \(x\). The uncovered set comprises of all alternatives that are not covered by another alternative.
central region of the policy space between the players’ ideal-points. Hence, the existence of fairness preferences is a possible alternative explanation for the absence of majority rule instability. Taking social preferences into account is therefore a promising way for the further development of democratic theory and improving our understanding about the viability and meaning of democratic decision making.
References


Appendix  Instructions to the experiment

Instructions

Welcome to today’s experiment. In the course of the experiment, you have the opportunity to earn money. How much you earn depends on your decisions during the experiment. Your decisions remain anonymous to the other participants in the experiment.

In any case, every participant will receive a lump sum payment (referred to as „Show-up-fee“ from here on) amounting to € 2.50. Moreover, you can earn tokens in the individual decision periods of the experiment. At the end of the experiment, all tokens during the experiment are added up. These tokens are then converted into EURO at a ratio of 1000:1. For instance, if you earn 3500 tokens, you will receive € 3.50 in addition to the Show-up-fee of € 2.50. The money will be handed out in cash at the end of the experiment. Participants only get to know their own payment.

Communication between participants is not allowed during the experiment. Please do not ask questions aloud! If something is unclear, please raise your hand. We will attend to your questions in private in that case.

The experiment in detail

During the experiment you will be part in a group of 5 participants. The members of your group will be called Participant A, Participant B, Participant C, Participant D and Participant E. You will not get to know the identity of the other participants in your group. The experiment takes 20 periods. All periods follow the same procedure. We will specify how an individual period proceeds below. During the experiment, the composition of the groups will not change. You will be in one group with the same 4 participants for all 20 periods of the experiment.

The Task

In each of the 20 periods your group will have to pick one point of a decision space by voting. You will find a picture of the decision field on the following page. The field is 200 units wide (x-axis) and 150 units high (y-axis). Each participant in your group has an ideal point in the decision field. The amount of tokens you earn in one period depends on point chosen by your group. The closer the chosen point is to your ideal point, the more tokens you earn. Thus, you earn the highest amount of tokens if the group chooses exactly your ideal point. In that case, you earn 1,000 tokens. All points inside the decision field earn you a positive amount of tokens. Therefore, you cannot incur any losses in a period.
Please have a look at the decision field below on this page and assume you were participant B. Your ideal point is point B with the coordinates 45 units on the x-axis and 63 units on the y-axis. The ideal points of the other 4 members of your group are A, C, D and E. Your own ideal point is blue in the experiment, those of the other 4 group members are black. In the situation shown below you receive more tokens if the group chooses P2 than if it chooses P1, because P2 is closer to your ideal point, B, than P1. Conversely, participant D receives more tokens if the group chooses P1 instead of P2 because P1 is closer to D’s ideal point than P2.

Over the course of the experiment’s 20 periods the position of your ideal point in the decision space does not change. The ideal points of the other participants in your group remain the same as well.

The course of decision making in your group

Below we will explain to you the details of how a decision is made by your group. **Your group must choose one point in the decision space by majority rule.** The decision making process has two phases:

**Phase 1:** A randomly chosen member of the group is allowed to choose a point and submit it to a vote.

**Phase 2:** The group members vote on the proposal.
Details of Phase 1

At the beginning of each period the computer assigns the right to make a proposal randomly to one of the 5 members of your group. That member who has been assigned the right to make a proposal will then see the screen shown below. The other members of the group are asked to wait until the proposing participant has made a decision.

The decision space just explained is placed in the top left area of the screen. On the top right you see which participant you are. In this example you are Participant C. Below you are informed that you have been assigned the right to make a proposal in the current period.

**In every period there is status quo point.** In the first period of the experiment, the status quo is situated in the upper left area of the decision space and has the coordinates 190 units on the x-axis and 140 units on the y-axis. The status quo is represented in the decision space with a green ‘+’. You can also see the exact coordinates of the status quo on the right in the line tagged „Status quo“, written in green. **In later periods the status quo of the current period is the point chosen by your group in the previous period.** Thus, if your group chooses the point
The participant with the right to make a proposal has two options:

1) **The participant can maintain the status quo.** In that case, the status quo of that period becomes the result of the period.

2) **The participant can propose an alternative point.** In that case the members of the group decide by majority rule whether they want to keep the status quo or whether they want to accept the proposal of the proposing participant.

The number of tokens that you and the other members gain in one period depends on the point of the decision space chosen by your group. You can see how many tokens you and the other members of the group gain in the table beneath the decision space. In the second row, you see how many tokens you and the other participants in your group earn if the status quo of that period is maintained (in the example shown above: 3 tokens for participant A, 1 token for participant B, etc.). In the third row, you see how many tokens you and the other participants in your group earn if your group accepts the current proposal (in the example shown above: 549 tokens for participant A, 147 tokens for participant B, etc.). The column that shows your own number of tokens is written in blue.

On the decision space, the current proposal is marked with a red 'X'. You can also read the exact coordinates of the current proposal in the box on the right in the line „Current proposal“, written in red, as well as in the last row of the tokens table beneath the decision space. At the beginning of each period the current proposal has the same coordinates as the status quo. If the computer assigned the right to make a proposal to you in the current period, you may change the current proposal. You have two options to do that:

You can click on points in the decision space with the computer mouse. The red 'X' will move to the point you clicked, and you can see how many tokens you and the other participants of your group earn if the group decides in favor of the new proposal in the third row of the table beneath the decision space.

As another option of changing the current proposal, you can type coordinates into the field on the right of the decision space in the line „New proposal“. The first field is for the x-axis, the second is for the y-axis. Only integers (0, 1, 2, 3, 4, ...) are permitted. For instance, it is not possible to type in 134.7. When you click „UPDATE PROPOSAL“, the red 'X' will move to the coordinates you typed in. In the table beneath the decision space, you see again how many tokens you and the other members of your group gain if your group chooses the current proposal.

If you have the right to make a proposal in the current period, you can change the current proposal as often as you like to experiment with different points on the decision space before submitting it to a vote if you wish so. You can see how many tokens you and the other
members of your group gain if the group chooses the current proposal in the last line of the table beneath the decision space at any time.

When you have decided whether to maintain the status quo of the current period or to propose an alternative point to the members of your group, you have to submit this decision. To do that, there are two yellow buttons on the right of the decision space. If you want to maintain the status quo, click the button that reads „Maintain status quo X: Y: “. If you want to submit your current proposal to a vote to the members of your group, click the button that reads „submit proposal X: Y: to a vote“. In any case you will be asked whether you want to transmit your decision to the other members of your group. If you want to transmit it, please click “YES”. If you want to reconsider your decision, please click “BACK”.

When the proposing participant has made a decision, Phase 1 of the current period ends:

- If the participant with the right to propose decides to maintain the status quo, the current period ends. In that case, the status quo is the chosen point of the period and all group members gain the amount of tokens assigned to them in the line „Status quo“ of the table beneath the decision space (In the example above: 3 tokens for participant A, 1 token for participant B, etc.).
- If the proposing participant decides to propose an alternative point, Phase 2 of the current period begins: The members of the group vote on the proposal.

Phase 2 in detail

If the proposing participant proposes an alternative point, the group members decide between the status quo and the proposal by majority rule. You will then see this screen:
In the upper right corner you can see which participant you are (In the example above you are Participant A). You are informed that the proposing participant (in the example Participant C) has transmitted a proposal, and asked to choose between the proposal and the status quo. On the left you see the decision space with the ideal points of all group members. The status quo is marked with a green ‘+’. The proposal is marked with a red ‘X’. In the table beneath the decision space you can see the exact coordinates of the status quo (190 units on the x-axis and 140 units on the y-axis in the example) and the proposal (83 units on the x-axis and 102 units on the y-axis in the example) in the first column. In the second row, the table shows you how many tokens you and the other members of your group gain if your group chooses the status quo (In the example above: 3 tokens for Participant A, 1 token for Participant B, etc.). In the third row you see the numbers of tokens if your group chooses the proposal of the proposing participant (In the example above: 549 tokens for Participant A, 147 tokens for Participant B, etc.). Your own numbers are written in blue. Those of the other participants are written in black.

Voting proceeds as follows: Each group member has one vote. Only those 4 group members who do not have the right to propose actually vote in Phase 2. The vote of the proposing group member is automatically counted in favor of his/her own proposal. You cast your vote on the right of the table. There are two yellow buttons.
If you want your group to maintain the status quo, please click the button „Vote for status quo X: Y:“ and confirm your choice by clicking „OK“.

If you want your group to choose the current proposal as the result of the period, please click the button „Vote for current proposal X: Y:“ and confirm your choice by clicking „OK“.

All group members cast their votes at the same time. As long as you have not made your decision, you do not get to know the decision of the other members of your group in the current vote.

Your group decides by majority rule: That alternative which gets 3 or more votes from the 5 members of the group is the result of the current period. The vote of the participant with the right to propose is automatically counted in favor of the proposal. Therefore, if 2 more members of the group vote in favor of the proposal, the proposed point is the result of the current period. You and the other members of your group receive the number of tokens shown in the third row of the table beneath the decision space. If 3 or all 4 of the other members decide to keep the status quo, the status quo is the result of the period. You and the other 4 members of your group receive the number of tokens shown in the second row of the table.

When all group members have cast their votes, Phase 2 ends and the current period is over.

The end of a period

When all groups in the experiment have completed the voting, you see another screen. You may have to wait for a short time until the other groups in the experiment have made their decision.

If your group voted on a proposal, this screen will show you the distribution of votes in your group. This means you can see which members of your group voted for the status quo and which voted for the proposal.

In any case, you see how many tokens you and the other participants in your group earned in the period. You also learn how many tokens you and the other members of your group each gained in the experiment up to that point.

Subsequently, a new period begins. Again, the computer assigns the right to make a proposal to one group member at random. The result of the preceding period is the status quo of the new period. The proposing participant decides again whether to maintain the status quo or to submit a proposal to a vote. If an alternative point is proposed, the group members again decide by majority rule whether to maintain the status quo or adopt the proposed point.
After the 20th period of the experiment, all tokens you have earned in the course of the 20 periods are added up. Your total payment consists of the payment resulting from your tokens plus the „show-up-fee” of € 2.50.

Included in the experiment is a questionnaire which will start after the 20th period of the experiment. We assure you that any information you enter there is treated anonymously and that your data will not be passed on to third parties.

In case you have questions, please raise your hand. We will come over to answer your question then.